

## CLAIMS

1     Claim 1.     An apparatus for explosively severing a length of pipe having an internal  
2     flowbore, said apparatus comprising: a tubular exterior housing having an interior barrel  
3     extending between opposite distal ends of the barrel; a plurality of high explosive pellets  
4     in axial alignment and bound together as a singular and independent unit that may be  
5     selectively inserted within said barrel and withdrawn unexploded therefrom as a single  
6     unit; and, electrically initiated detonation means engaging the explosive pellet unit.

1     Claim 2,     An apparatus as described by claim 1 wherein said detonation means  
2     comprises detonators at opposite ends of said pellet unit.

1     Claim 3.     An apparatus as described by claim 1 wherein the detonators respective to  
2     said opposite ends are connected for simultaneous detonation.

1     Claim 4     An apparatus as described by claim 3 wherein said opposite end detonators  
2     resiliently bear compressively against respective ends of said pellet unit.

1     Claim 5.     An apparatus as described by claim 3 wherein one end of said exterior  
2     housing is selectively detached, with one of said detonators, from the remainder of said  
3     exterior housing for loading said pellet unit into said barrel.

1 Claim 6. An apparatus for explosively severing a length of pipe having an internal  
2 flowbore, said apparatus comprising:

- 3 (a) a tubular housing having an internal barrel space between opposite distal  
4 ends for aligning an axial column of explosive material;
- 5 (b) detonator socket housings disposed at opposite ends of said opposite distal  
6 ends;
- 7 (c) resilient bias means for resiliently translating at least one socket housing  
8 along said barrel space toward the other socket housing;
- 9 (d) exploding bridge wire detonators in said socket housings; and,
- 10 (e) a capacitive firing device electrically connected to said exploding bridge  
11 wire detonators.

1 Claim 7. An apparatus as described by claim 6 wherein at least one of said detonator  
2 housings may be selectively separated from said tubular housings while maintaining an  
3 electrically conductive connection with said firing device.

1 Claim 8. An apparatus as described by claim 6 wherein one distal end of said tubular  
2 housing is sealed by a closure means that is selectively removed from said tubular  
3 housing to load a column of explosive material into said internal barrel, said closure  
4 means including the socket housing respective to said one distal end.

1 Claim 9. An apparatus as described by claim 8 wherein said closure means further  
2 including a guide aperture for aligning said explosive material within said internal barrel.

1    Claim 10.    An apparatus as described by claim 6 wherein the socket housing  
2    respective to said other distal end is resiliently biased along the length of said internal  
3    barrel to compressively confine said column of explosive material between said socket  
4     housings.

1    Claim 11.    A method of severing a length of pipe having an internal flow bore  
2     comprising the steps of:  
3        assembling a plurality of high explosive pellets into a singular, columned unit;  
4        depositing said columned unit into a tubular barrel;  
5        resiliently engaging at least one end of said columned unit with detonator means;  
6        positioning said tubular barrel within said flow bore at a predetermined location  
7     along the length of said flow bore; and,  
8        electrically initiating said detonator means.

1    Claim 12.    A method of severing a length of pipe as described by claim 11 wherein  
2     detonator means engage opposite ends of said columned unit of high explosive pellets.

1    Claim 13.    A method of severing a length of pipe as described by claim 12 wherein  
2     opposite end detonator means are simultaneously initiated.

1    Claim 14.    A method of severing a length of pipe as described by claim 11 wherein  
2     said plurality of high explosive pellets are unitized in a column separate from said tubular  
3     barrel and inserted in said tubular barrel as a singular unit prior to positioning said barrel  
4     within said flow bore.

1 Claim 15 A method of severing a length of pipe as described by claim 14 wherein  
2 said plurality of pellets are formed for meshed engagement with unitizing structure  
3 whereby said unitizing structure and meshed pellets are inserted within or removed from  
4 said tubular barrel as a singular unit.

1 Claim 16. A method of severing a length of pipe having an internal flow bore  
2 comprising the steps of:

3 providing a tubular barrel space for assembling a column of highly explosive  
4 material;

5 providing exploding wire detonators at opposite ends of said tubular barrel space;

6 providing a capacitive firing device for selectively igniting said detonators  
7 substantially simultaneously;

8 assembling a column of highly explosive material within said tubular barrel space;

9 resiliently engaging opposite ends of said explosive material column with said  
10 exploding bridge wire detonators;

11 positioning said tubular barrel within the internal flow bore of a pipe at a  
12 predetermined location along the length of said flow bore; and,

13 electrically initiating said detonator means.

1 Claim 17. A method as described by claim 16 wherein said column of explosive  
2 material is assembled externally of said tubular barrel and positioned into said barrel  
3 space as an integral unit;

1 Claim 18. A method of severing a string of pipe extending within a well bore from a  
2 wellhead site, said method comprising the steps of:

3 providing a severing tool at a wellhead site, said severing tool having an internal  
4 barrel space between opposite distal ends within a substantially tubular housing;

5 providing exploding bridge wire detonators at said opposite distal ends;

6 electrically connecting said exploding bridge wire detonators to a capacitive firing  
7 device for substantially simultaneous ignition of said detonators by said firing device;

8 delivering said electrically connected severing tool to a wellhead site;

9 depositing a column of explosive material in said internal barrel space between  
10 said exploding bridge wire detonators at said wellhead site;

11 positioning said severing tool at a predetermined location within a string of pipe  
12 suspended from said wellhead site; and,

13 detonating said column of explosive material by an electrical signal to said  
14 capacitive firing device.

1 Claim 19. A method as described by claim 18 wherein said column of explosive  
2 material is assembled as a singular unit externally of said barrel space and deposited in  
3 said barrel space as a singular unit.

1 Claim 20. A method as described by claim 19 wherein said column of explosive  
2 material is deposited within said barrel space without electrically disconnecting either of  
3 said detonators.